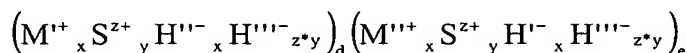
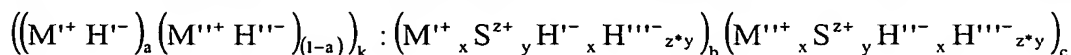


ABSTRACT OF THE DISCLOSURE

In a method for vapor-depositing a substrate with a layer of a needle-shaped x-ray fluorescent material containing at least one alkali metal, alkali halogenide phases and an alkali halogenide are mixed in a vapor phase and are vapor-deposited on the substrate. A needle-shaped fluorescent material is thereby produced having the formula



wherein M^{+} is at least one metal ion from the group Na, K, Rb and Cs, H^{-} is at least one halogenide from the group F, Cl, Br and I and S^{Z+} is at least one lanthanide ion from the group La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb or Lu.